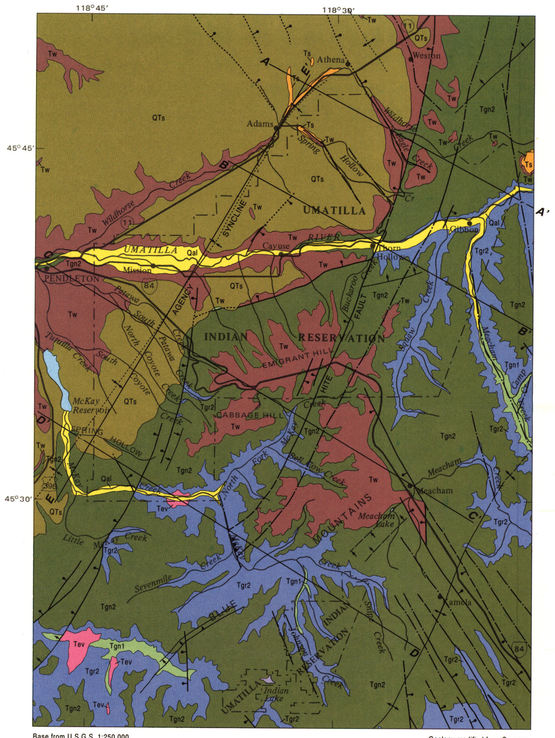
GEOLOGIC MAP



Base from U.S.G.S. 1:250,000 Pendleton quadrangle.

Geology modified from Swanson and others (1979 and 1981), and Walker (1977).

EXPLANATION

QUATERNARY

- Qal — **Alluvial deposits**

QUATERNARY AND TERTIARY

- QTs — **Sedimentary deposits**

TERTIARY

- Ts — **Saddle Mountains Basalt**
- Tw — **Wanapum Basalt**

Grande Ronde Basalt

- Tgn2 — Normal polarity magnetostratigraphic unit 2, N2
- Tgr2 — Reverse polarity magnetostratigraphic unit 2, R2
- Tgn1 — Normal polarity magnetostratigraphic unit 1, N1
- Tgr1 — Reverse polarity magnetostratigraphic unit 1, R1
- Tev — **Pre-Miocene volcanic rocks**

Contact—Queried where uncertain.

Fault—Short-dashed where inferred, dotted where concealed; bar and ball on downthrown side.

Inferred fault in subsurface—Arrows show relative displacement.

Thrust fault—Sawteeth on upper plate.

Prominent photo or topographic lineament—Possibly a strike-slip fault.

Anticlinal fold—Dashed where approximately located.

Synclinal fold—Dotted where concealed.

Monocline—Dashed where approximately located;

abrupt decrease of dip;

abrupt increase of dip.

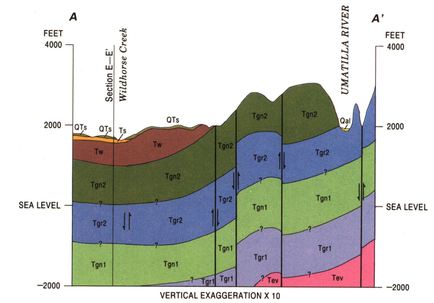
B — B' **Geologic section**

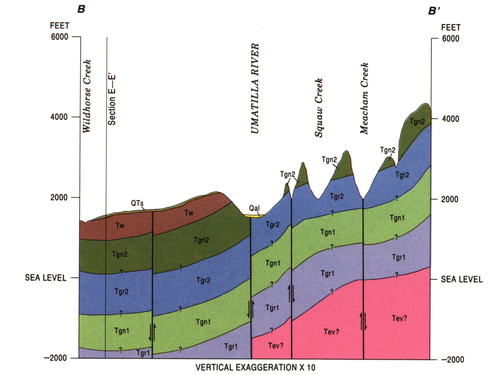
Reservation boundary

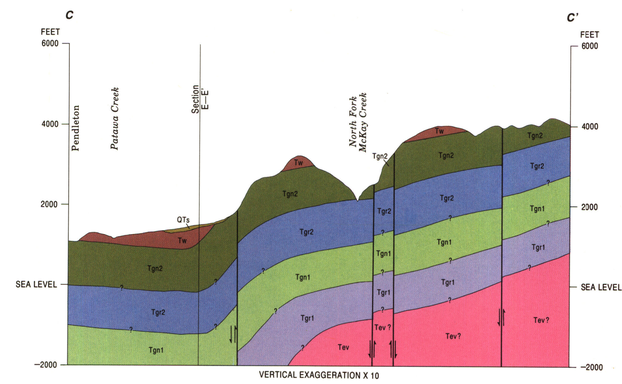
0 5 10 MILES

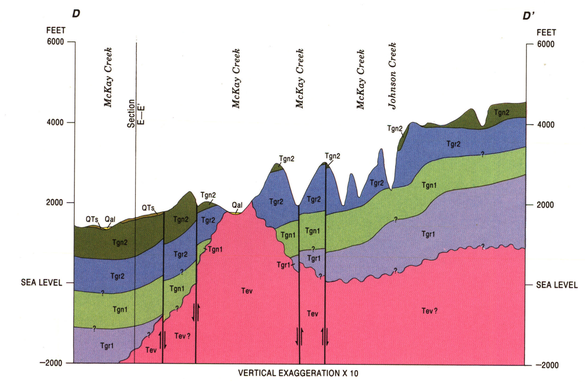
0 5 10 KILOMETERS

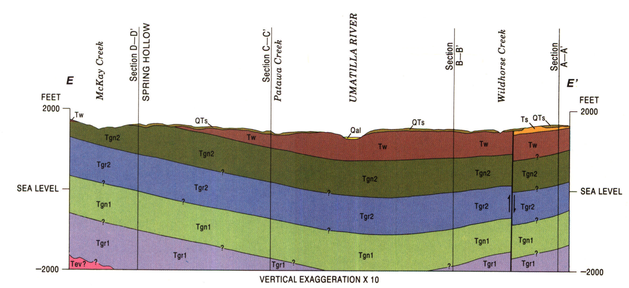
GEOLOGIC SECTIONS











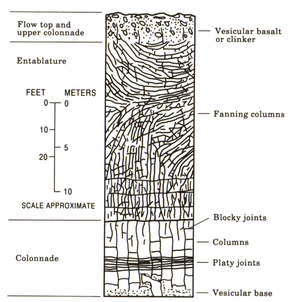
STRATIGRAPHIC AND HYDROGEOLOGIC SUMMARY

PERIOD	SERIES	BASALT STRATIGRAPHY	SEDIMENTARY ROCKS	HYDROGEOLOGIC UNITS
QUATERNARY	HOLOCENE		Unconsolidated fluvial, bouldery and cobbly basaltic gravel, sands, and silts	Alluvial deposits
TERTIARY-QUATERNARY	HOLOCENE, PLEISTOCENE, AND PLIOCENE		Semiconsolidated glaciofluvial, fluvial, lacustrine, loess, volcaniclastic and volcanic materials	Sedimentary deposits
	MIOCENE	Columbia River Basalt Group; Yakima Basalt Subgroup: Saddle Mountains Basalt; Saddle Mountains-Wanapum interbed	Ellensburg Formation	Saddle Mountains unit
		Wanapum Basalt; Wanapum-Grande Ronde interbed		Wanapum unit
		Grande Ronde Basalt (Magnetostratigraphic units N2, R2, N1, R1); Picture Gorge Basalt		Grande Ronde unit
		Imnaha Basalt		
	PRE-MIOCENE	Pre-Columbia River Basalt		

Modified from Drost and others (1990).

TYPICAL STRUCTURES IN A BASALT FLOW

(Swanson and others, 1979)



GENERALIZED GEOLOGY AND STRATIGRAPHY OF THE UMATILLA INDIAN RESERVATION AREA, OREGON

By
Joseph B. Gonthier and Edward L. Bolke

1993

Gonthier, J.B., and Bolke, E.L., 1993, Summary appraisal of water resources of the Umatilla Indian Reservation, Oregon: U.S. Geological Survey Water-Resources Investigations Report 91-4087.